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ABSTRACT

A study explored attitudes of adult vocational instructors in Central Ohio toward the use of higher-order thinking skills in vocational education. The attitude instruments developed by Kitinoja and Miller (1989) and Baldwin (1989) were adapted into a six-point Likert-scale to collect data from 32 of 33 full- and part-time instructors in 10 adult vocational institutions selected by cluster random sampling. Findings were analyzed using descriptive and inferential statistics. Instructors agreed with the use of educational objectives for the following purposes: (1) building program curriculum, planning learning experiences, and defining vague educational goals; (2) helping instructors teach, facilitating exchange of information about delivery of educational programs among instructors, and providing instructors with ideas of how to teach adult learners at higher levels of learning; (3) evaluating educational programs to help specify the criteria used to determine acceptable performance by adult learners and permit instructors to compare present programs goals with possible outcomes; (4) enabling adult learners to do a better job of learning, help them understand the purpose of instruction, and make them better users of information given in the program; and (5) maximizing the probability of achieving the educational goals of programs, analyzing the levels of learning that take place in teaching, and enhancing instructors' understanding of the educational process. (Contains 7 data tables and 13 references.) (YLB)

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SR 84

Summary of Research

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Attitudes of Central Ohio Adult Vocational Instructors Toward the Use of Higher Order Thinking-Skills

P.J. Squire and Larry E. Miller

ED 408 471

Taxonomies of educational objectives are comprehensive classifications that group or categorize the typical outcomes of instruction in hierarchical order from the simplest to the most complex (Seifert, 1991). The meaning of cognition, on the other hand, is in a state of flux. The term is criticized because it is often used as a catch-all to mean whatever the speaker or writer intends and, whenever used this way, lacks a precise or agreed upon meaning. Despite this problem, and no doubt because of it, progress is being made in clarifying what is meant by higher order thinking skills (Thomas, 1992).

Related Literature

In education, the psychologists who have had the greatest impact on the process of teaching and learning are Benjamin Bloom and his associates (1956). The value of their work has been reflected in the priority educators give to developing objectives related to learners' thinking. The Bloom taxonomy has defined the cognitive domain as encompassing the intellectual processes including knowledge, comprehension, application, analysis, synthesis and evaluation. Since the publication of Bloom's taxonomy, many other educators and psychologists have contributed their perspectives.

Winnie (1985) described cognition as including the process of perception, thinking, reasoning, understanding, problem solving, and remembering. Page et al. (1980) and Thomas (1992) referred to cognition as an umbrella term for the process of perception, discovery, recognition, imagining, judging, memorizing, learning and thinking through ways the individual obtains knowledge and conceptual understanding or explanation. According to Blishen (1969), cognition includes factors common to all types of knowing such as feelings, relationships, ideas, and the process of imagining, judging, reasoning, remembering, understanding and problem solving.

Quellmatz (1985) postulated that the commonly specified higher order reasoning processes included the cognitive processes of analyzing, comparing, inferring, interpreting, and evaluating; and the metacognitive process of planning, monitoring, and reviewing and revising. His definition was an attempt to merge a goal-directed, problem solving prospective with an inferential, evaluative and critical thinking perspective.

Using Bloom's taxonomy as a guide, Miller (1990) referred to higher order thinking as requiring students' to apply, analyze, synthesize, or evaluate information. He postulated that higher order thinking occurs when students are able to use what they learn to deal with real world problems and situations. Lee (1989) noted that the ability to think creatively, make decisions, solve problems, visualize, reason, analyze, interpret, and know how to learn these skills are most often mentioned as definitions of critical thinking. Common characteristics of critical thinkers, according to Lee, are: flexibility, metacognition, transfer of knowledge, problem orientation, open mindedness, use of quality standards and independence.

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The emphasis on teaching higher order thinking skills in vocational education, according to Thomas and Litowitz (1986), is due to the emergence of an information society in which people's daily lives and work increasingly demand their ability to process large amounts of information in systematic ways. Forces driving this demand, Thomas and Litowitz explained, are (1) the rapidly increasing amount of available knowledge and its complexity, and (2) the widespread utilization and integration of computers throughout society, which create increased demand for information processing capacity.

Purpose and Objectives

The purpose of the study was to explore and describe the attitudes of adult vocational instructors in Central Ohio toward the use of higher order thinking skills in vocational education. Answers to these questions were explored in conducting the study:

1. What are the attitudes of the instructors toward the use of educational objectives:
   a) in planning instruction?
   b) in teaching?
   c) for adult learners?
   d) in evaluating instruction?
   e) for general uses in education?

2. Is there any relationship among the instructors' demographic and professional characteristics and their perceptions of the uses of educational objectives?

Procedures

Population and Sample

The study population comprised all full- and part-time adult vocational education instructors in Federally sponsored adult vocational education institutions in Central Ohio. Due to the fact that 56% of the instructors were part-time, it became impossible to get a frame of instructors in any of the institutions from which to draw a sample. The situation created the need for cluster random sampling of 10 adult vocational institutions and using all current instructors at those institutions for the study rather than sampling individual instructors. Data were collected from 32 of the 33 full-time and part-time instructors in the 10 selected cluster samples. One of the instructors declined, for unknown reasons, to participate in the study.

Instrumentation

The attitude instruments developed by Kitinoja and Miller (1989) and Bhardwaj (1989) were revised and adapted to reflect the needs and purposes in the adult vocational education programs. For example, the term "clientele" in their instrument was changed to adult learner in the revised instrument. A panel of four faculty members of The Ohio State University examined the instrument for content validity and a reliability estimate yielded a Cronbach's alpha of .90 on the data collected from the pilot test. The instrument was further subjected to a field test to ascertain its clarity and suitability.

Data Collection and Analysis

Thirty-two instructors responded independently to a six-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = slightly agree, 5 = agree, and 6 = strongly agree) instrument. A median of 3.5 would separate disagreement from agreement. Each item was either clearly positive or negative with regard to the uses of educational objectives in program planning, teaching, evaluating learners and general users. Negative items were reverse coded when used in a summated fashion. The findings were analyzed with the aid of the SPSS PC + at the Ohio State University Computer Center and analyzed using descriptive and inferential statistics.

Results

The instructors were asked to indicate their attitude toward the use of educational objectives in program planning. Means (M) and standard deviations (SD) were used to describe the data.

Table 1 illustrates that the instructors positively agreed with the use of educational objectives for building program curriculum (M = 4.84), followed by planning learning experiences (M = 4.69), and defining vague educational goals (M = 4.56). The instructors agreed slightly with the use of educational objectives in facilitating exchange of information about educational program planning (M = 4.41), helping educators prioritize educational programs (M = 4.32), providing a basis for subject matter to be taught (M = 4.22), and providing a basis for selecting teaching methods (M = 4.22).

The attitudes of the instructors (Table 2) toward the use of educational objectives in teaching show that the instructors agreed with the use of educa-

TABLE 1

ATTITUDES OF INSTRUCTORS TOWARD THE USE OF EDUCATIONAL OBJECTIVES IN PROGRAM PLANNING

Item	Mean	SD
1. Provide basis for building program curriculum	4.84	.99
2. Help educators plan learning experiences	4.69	1.12
3. *Help define vague education goals	4.56	1.24
4. Facilitate exchange of information about educational program planning	4.41	1.04
5. Help educators prioritize educational programs	3.32	1.28
6. Provide a basis for selecting teaching methods	4.22	1.39
7. Provide a basis for selecting subject matter to be taught	4.22	.13
8. *Make exchange of information about planning of programs more difficult between adult vocational instructors and administrators	2.68	1.14
9. Make planning of learning experiences more difficult	2.59	1.29

*Negatively worded items were reverse coded.

TABLE 2

ATTITUDES OF INSTRUCTORS TOWARD THE USE OF EDUCATIONAL OBJECTIVES IN TEACHING

Item	Mean	SD
1. Helpful to all instructors involved with teaching	4.91	1.06
2. Facilitate exchange of information about delivery of educational programs among instructors	4.03	1.36
3. Provide instructors with ideas of how to teach adult learners at higher levels of learning	4.03	1.43
4. Useful in determining adult vocational education instructors' success in teaching	3.94	1.24
5. Promote the exchange of teaching materials among adult vocational education instructors	3.88	1.36
6. *Make exchange of information about delivery of educational programs more difficult between adult vocational education instructors and administrators	2.47	1.24

*Negatively worded items were reverse coded.

tional objectives in helping instructors teach (M = 4.91), followed by their use to facilitate exchange of information about delivery of educational programs among instructors (M = 4.03), and providing instructors with ideas of how to teach adult learners at higher levels of learning (M = 4.03). The instructors slightly agreed with the use of educational objectives in determining adult vocational education instructors' success (M = 3.94) and promoting the exchange of teaching materials among adult vocational education instructors (M = 3.94).

There was also overwhelming agreement among the instructors (Table 3) that educational objectives would permit the instructors to state programs in measurable terms (M = 4.88).

The instructors further agreed that the use of educational objectives in evaluating educational programs would help specify the criteria used to determine acceptable performance by adult learners (M = 4.72), permit instructors to compare present program goals with possible outcomes (M = 4.53), followed by the use of educational objectives in evaluating educational programs (M = 4.44), and promoting the exchange of evaluation ideas among adult vocational instructors (M = 4.09).

The attitudes of vocational adult instructors about the use of educational objectives for adult learners as reported in Table 4, indicate that the instructors agreed that the use of educational objectives will enable learners to do a better job of learning (M = 4.50), followed by helping learners understand the purpose of instruction (M = 4.41), and making the adult learners better users of information given in the program (M = 4.38). The instructors disagreed with the use of educational objectives in making learning more difficult for adult learners (M = 2.47).

As indicated in Table 5, the instructors agreed most with the general use of educational objectives in maximizing the probability of achieving the educational goals of programs (M = 4.72), followed by the use of educational objectives in analyzing the levels of learning that take place in teaching (M = 4.16), and enhancing the instructors' understanding of the educational process (M = 4.16). The instructors slightly disagreed that the use of educational objectives would make it hard for the instructors because the instructors do not know the process of writing behavioral objectives (M = 3.09).

A comparison of items' group means analyzed in Table 1, 2, 3, 4 and 5 reveal that there was general agreement (M > 3.5) among the instructors about the use of objectives for learners (M = 4.07), uses in program evaluation (M = 4.07), and in program planning (M = 4.03). There was slight agreement among the instructors about the uses of objectives in teaching (M = 3.80) and general uses (M = 3.56).

The correlations between the instructors' demographic and professional characteristics in Table 7 show that a substantial association exists between inservice training and the use of educational objectives in planning programs (r = .51), and in teaching programs (r = .50). There was also substantial association observed between workshop attendance and the use of educational objectives in planning (r = .62), and in evaluating programs (r = .50). All other associations between the uses of educational objec-

TABLE 3

ATTITUDES OF INSTRUCTORS TOWARD THE USE OF EDUCATIONAL OBJECTIVES IN EVALUATION

Item	Mean	SD
1. Permit the teachers to state programs in measurable terms	4.88	.09
2. Help to specify the criteria to determine acceptable performance by adult learners	4.72	.89
3. Permit instructors to compare present program goals with possible outcomes	4.53	1.05
4. Help adult vocational education instructors develop evaluation plans	4.44	1.24
5. Promote the exchange of evaluation ideas among adult vocational instructors	4.09	1:23

TABLE 4

ATTITUDES OF INSTRUCTORS TOWARD THE USE OF EDUCATIONAL OBJECTIVES FOR ADULT LEARNERS

Item	Mean	SD
1. Enable learners to do a better job of learning	4.50	1.19
2. Help adult learners understand the purpose of instruction	4.41	1.10
3. Make the adult learner a better user of the information given in the program	4.38	1.18
4. Help adult learners in putting pieces of information together to solve a problem	4.26	1.12
5. Assist adult learners with learning how to make better decisions	4.25	1.28
6. Help adult learners set goals of learning	4.22	1.18
7. Help adult learners analyze information better	4.19	1.18
8. Help identify the means by which adult learners could change behavior in a specified direction	3.94	1.24
9. Make learning more difficult for adult learners*	2.47	1.16

* Negatively worded items were reverse coded

TABLE 5

ATTITUDES OF INSTRUCTORS TOWARD THE GENERAL USES OF EDUCATIONAL OBJECTIVES

Item	Mean	SD
1. Maximize the probability of achieving educational goals of programs	4.72	1.22
2. Useful in analyzing the levels of learning that take place in teaching	4.16	1.25
3. Enhance the instructors' understanding of the educational process	4.16	1.17
4. Help adult vocational education administrators more than adult vocational education instructors	3.13	1.26
5. *Hard for the adult vocational instructor because he or she does not know the process of writing behavioral objectives	3.09	1.69

* Negatively worded items were reversed coded.

TABLE 6

SUMMARY BY DOMAIN OF ATTITUDES OF INSTRUCTORS TOWARD THE USES OF EDUCATIONAL OBJECTIVES

Item	Mean
Uses for learners	4.07
Uses in program evaluation	4.07
Uses in planning	4.03
Uses in teaching	3.80
General uses	3.56

TABLE 7

RELATIONSHIPS AMONG VARIABLES

Characteristics	Planning	Teaching	Evaluate	Learners	General Uses
Gender	.09	.14	.11	.03	.13
Age	.14	.01	.01	-.20	-.09
Degree	.06	.03	.00	.18	.00
Years Teaching	.30	.11	-.01	.12	.10
Educational Objective	.33	.03	.03	.20	.00
Training	.51	.50	.40	.15	.04
Workshop	.62	.33	.50	.42	.03
Seminar	.30	.16	.31	.30	-.18
Other	.17	.10	.22	.18	.04
Status	.50	.50	.31	.31	.21

tives and demographic and professional characteristics of the instructors were either moderate, low, or negligible (Davis, 1971).

Conclusions and Recommendations

The findings have provided the basis for further research into the uses of educational objectives in adult vocational education at higher levels of cognition. Specific areas recommended for further investigations include:

1. A study to compare the attitudes of instructors in non-vocational adult programs to those in adult vocational programs toward the use of educational objectives in various aspects of teaching.
2. Investigating the attitudes of teacher educators toward preparing vocational education instructors at higher levels of cognition.
3. Investigating the attitudes of adult vocational education instructors toward learning to teach at higher levels of cognition.

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Summary of Research

The emphasis on teaching higher order thinking skills in vocational education is due to the emergence of an information society in which people's daily lives and work increasingly demand their ability to process large amounts of information in systematic ways. This study explores and describes the attitudes of adult vocational instructors in Central Ohio toward the use of higher order thinking skills in vocational education. It should be of interest to researchers who are examining the use of educational objectives in adult vocational education at higher levels of cognition.

This summary is based on a dissertation by P. J. Squire under the direction of Professor Larry E. Miller. P. J. Squire was a graduate student in the Department of Agricultural Education at The Ohio State University. He is currently Lecturer, Department of Agricultural Education, Extension, and Economics; Botswana College of Agriculture, Gaborone, Botswana. Dr. Miller is a Professor in the Department of Agricultural Education, The Ohio State University. Special appreciation is due to Ruth Thomas, University of Minnesota; Robert Martin, Iowa State University; and Emmalou Norland, The Ohio State University for their critical review of the manuscript prior to publication.

Research has been an important function of the Department of Agricultural Education since it was established in 1917. Research conducted by the Department has generally been in the form of graduate theses, staff studies, and funded research. It is the purpose of this series to make useful knowledge from such research available to practitioners in the profession. Individuals desiring additional information on this topic should examine the references cited.

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SR 84 1997